

# Phillips Scientific

## Octal 300 MHz Discriminator

## NIM MODEL 708

### FEATURES

- GUARANTEED 300 MHz OPERATION
- EIGHT TOTALLY INDEPENDENT CHANNELS
- UPDATING OUTPUT STAGE
- BIN GATE AND FAST VETO INHIBITING

### DESCRIPTION

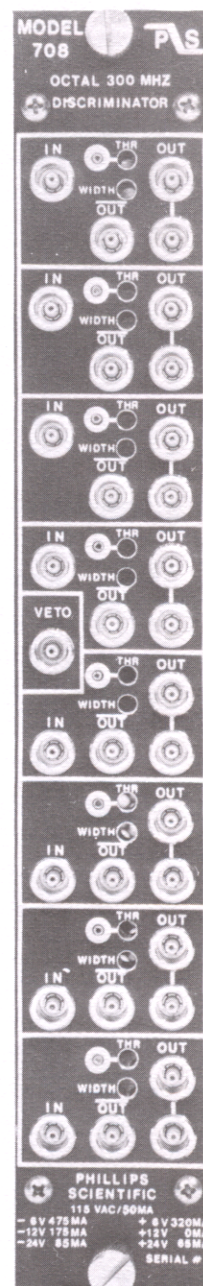
Utilizing the most advanced technology, the Model 708 Octal Discriminator is the only octal discriminator boasting a 300 MHz continuous repetition rate capability.

The updating stage ensures deadtimeless operation for coincidence applications, while the double-pulse resolution is a remarkable 3.3 nSEC for counting applications. A fifteen turn potentiometer provides continuous output width adjustment from 2 nSEC to over 50 nSEC for each channel.

The threshold is variable from -10 mV to -1 volt with a fifteen turn potentiometer on each channel. The threshold setting is easily determined from a front panel test point that provides a DC voltage equal to ten times the actual threshold.

Inhibiting of the discriminator can be accomplished in two ways. A front panel LEMO input accepts a NIM level pulse for fast vetoing of all channels. The fast veto is capable of inhibiting a single pulse from a 300 MHz input pulse train. Secondly, a slow bin gate via the rear panel connector inhibits all eight channels and is enabled or disabled from a rear panel slide switch.

The outputs are the current source type with one pair of negative bridged outputs and one complement for each channel. When only one output of the bridged pair is used, a double-amplitude NIM pulse (-32 mA) is generated, making it ideal for driving long cables with narrow pulses. When both connector pairs are used, a normal NIM level (-16 mA) is produced. The transition times are less than 1.0 nSEC, and their shapes are virtually unaffected by the loading conditions of the other outputs.



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## INPUT CHARACTERISTICS

### General:

One LEMO connector input per channel; 50 ohms  $\pm 1\%$ , DC coupled; less than 2% input reflection for a 1.0 nSEC input risetime. Input protection clamps at  $\pm 7$  volts and -5 volts and can withstand  $\pm 2$  amps for 1  $\mu$ SEC with no damage to the input.

### Threshold:

-10 mV to -1 volt; 15 turn screwdriver adjustment; better than  $\pm 0.2\%/^{\circ}\text{C}$  stability; front panel test point provides a DC voltage ten (10) times the actual threshold setting.

### Fast Veto:

One LEMO connector input common to all eight (8) channels; accepts normal NIM level pulse (-500 mV), 50 ohms, direct coupled; must precede the negative edge of input pulse by 3 nSEC; capable of gating a single pulse in a 300 MHz continuous pulse train.

### Bin Gate:

Rear panel slide switch enables or disables bin slow gate in accordance with TID-20893.

## OUTPUT CHARACTERISTICS

### General:

Three LEMO connector outputs per channel; One negative bridged pair and one complementary output; The bridged outputs deliver -32mA into a single 50 ohm load (-1.6 volts), or -16mA (-800 mV) when both outputs 50 ohm terminated. The complement is quiescently -16mA (-800mV) and goes to 0mA during output. The output rise and fall times are less than 1.0 nSEC from 10% to 90% levels.

### Width Control:

One control per channel, 15 turn screwdriver adjustment; outputs continuously variable from 2 nSEC to 50 nSEC.

### Updating Operation:

The output pulse will be retriggered if a new input pulse occurs while the output is active. A 100% duty cycle can be achieved.

## GENERAL PERFORMANCE

### Continuous Rate:

Greater than 300 MHz, 3 db bandwidth with output width set at minimum.

### Pulse-Pair Resolution:

Better than 3.3 nSEC, with output width set at minimum.

### Input to Output Delay:

Less than 8.0 nSEC.

### Multiple Pulsing:

No multiple pulsing, one and only one output pulse regardless of input pulse amplitude or duration.

### Power Supply:

-6 volts @ 425 mA	+6 volts @ 320 mA
-12 volts @ 165 mA	+12 volts @ 0 mA
-24 volts @ 80 mA	+24 volts @ 65 mA
115 volts AC @ 80 mA	

**Note:** All currents are within NIM specification limits allowing a full powered bin to be operated without overloading.

### Operating Temperature:

$0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$  ambient.

### Packaging:

Standard single width NIM module in accordance with TID-20893 and section ND-524.

### Quality Control:

Standard 36-hour, cycled burn-in with switched power cycles.

### Options:

Contact Phillips Scientific to find out about available options.

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